

LEOPOLD CENTER
FOR SUSTAINABLE AGRICULTURE

2002-2003

ANNUAL REPORT

the art of agriculture





Aldo Leopold (1887-1948), the conservationist, ecologist, and educator for whom the Center was named.



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The Leopold Center was established by the Iowa Legislature as part of the Iowa Groundwater Protection Act of 1987. Its legislatively mandated goals are to identify and reduce impacts of agricultural practices, contribute to the development of profitable farming systems that conserve natural resources, and cooperate with Iowa State University Extension to inform the public of new findings.

The Leopold Center for Sustainable Agriculture explores and cultivates alternatives that secure healthier people and landscapes in Iowa and the nation.

Information for this report was compiled by Leopold Center staff with the help of its partners and educators, who are committed to improving Iowa agriculture, environment, water quality and the lives of Iowans.

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Letter from the DIRECTOR



Fred Kirschenmann

*T*he Groundwater Protection Act that created the Leopold Center makes it clear that we are expected to be an institution for change. We are mandated to conduct and sponsor research that maintains farm profitability while reducing negative environmental and socio-economic impacts of agricultural practices. We are called to research and assist in developing emerging alternative practices that are consistent with a sustainable agriculture. Everything that we do must be measured against that daunting challenge. And so we must continually ask ourselves the question: how can we bring about these changes more effectively?

As a result of months of conversations with citizens and professionals, we have decided that we can fulfill our mandate more successfully by focusing our work on three initiatives: marketing and food systems, policy, and ecology. This year's report begins to reflect that reconfiguration of our work.

We launched our Market and Food Systems Initiative first, believing that if farmers were to stay in business they needed to take advantage of new marketing opportunities as quickly as possible. This initiative will research and develop marketing systems that enable farmers to produce and retain more value on the farm, based on production systems that contribute to environmental stewardship and community revitalization. A significant part of this annual report describes some of our early work in this area.

Our Policy Initiative will research policy options that help beginning farmers enter ecologically sound and profitable farming and marketing operations, that reward farmers for producing public goods such as ecologically restored landscapes, and that modify regulations which sometimes put locally owned micro-enterprises at a competitive disadvantage.

Our Ecology Initiative will research and develop production systems that increase productivity and profitability for farmers, restore the ecological health of the land through enhanced biodiversity, and help sustain rural communities.

In all this, we will not serve as a detached grant-maker. We will serve as a catalyst and convener for change. We will seek to form partnerships and alliances among various organizations and industries, using our funds to leverage additional support, so that working together we can achieve our common goal of developing a more resilient agriculture, more vibrant rural communities, and healthier landscapes.

As always, we hope you find this report informative and enjoyable. And, as always, we invite your comments and your involvement in our important work.

A handwritten signature in dark ink, appearing to read "Fred Kirschenmann".

Fred Kirschenmann

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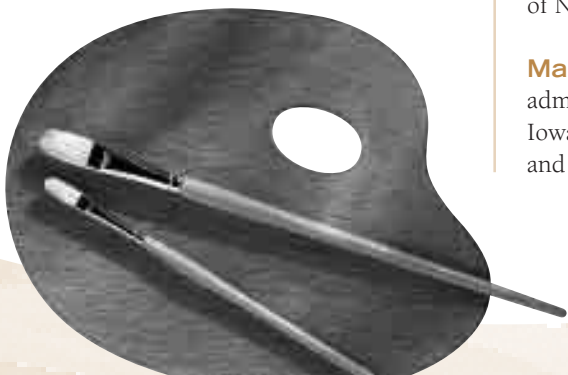
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What happened with the **BIG BUDGET CUT?**

AS THE FISCAL
YEAR BEGAN IN
JULY 2002,
THE LEOPOLD
CENTER FACED
A \$1 MILLION
CUT IN ITS
FUNDING
STREAM FOR
THE YEAR.

*T*he Iowa legislature had opted to transfer the funds from the Agricultural Management Account (one of the Center's two funding streams) to the state's General Fund to meet other fiscal obligations. This occurred despite the fact that the Center's founding legislation had earmarked these funds derived from taxes on agricultural chemicals for use in combating impacts from agricultural practices.

The Center was able to draw on financial reserves amassed during times of solvency, but it was clear that some reduction of expenditure was needed to ride out the storm. For the first time in its history, the Center did not solicit proposals for new research projects. Existing projects were supported because it was deemed important to continue research that had already begun. However, all principal investigators were put on notice that future funding was not guaranteed. Other funding requests, such as those for special projects or events, were dealt with on a case-by-case basis, with many being rejected.

One clerical position remained unfilled from the previous year. When a full-time accounting position was vacated, the work was contracted to the College of Agriculture on a half-time basis and Center staff picked up the slack. Travel was curtailed, unless the travel expenses

were paid by another organization. Purchases, such as for equipment, were scaled back.

Amid the immediate signs of a new austerity, there was a dawning awareness that the state funding streams were no longer invulnerable. The Center was going to have to prove its worth to the legislature and do a better job of showing just how its research and outreach have helped Iowans and Iowa agriculture. This requires a two-pronged approach of making sure that future efforts sponsored by the Leopold Center are more closely linked to Iowa's economic development and well-being, while at the same time continuing to be alert to opportunities for healthier alternatives for Iowa agriculture.

The year ended with the Center cautiously soliciting proposals in the areas of marketing and food systems and public policy. The request for project ideas was carefully targeted to areas identified as critical to the activities of these two initiatives and the state's alternative agricultural community.

As the 2003 legislative session ended, the Center experienced only a modest cut (\$13,000) in its research fund that is administered through Iowa State University. At that point, there was some relief there would not be a second year of significant retrenchment on tap. But there was also a realization that financial security would remain elusive for Iowa's state-funded agencies over the next few years.



Fundraising

efforts aid Center in tough budget year

A \$1 MILLION BUDGET CUT MAY HAVE LEFT THE LEOPOLD CENTER IN A FINANCIAL BIND, BUT IT DIDN'T TAKE LONG FOR A VARIETY OF FRIENDS AND SUPPORTERS TO COME FORWARD AND OFFER ASSISTANCE.



A dinner in honor of the Center was held on October 21 at the Hotel Fort Des Moines with 180 attendees, locally grown food, and abundant good wishes. The event was organized by the National Catholic Rural Life Conference (NCRLC). Additional support came from the Practical Farmers of Iowa; Midwest Sustainable Agriculture Working Group; Iowa Natural Heritage Foundation; Soil and Water Conservation Society, Iowa; Conservation Districts of Iowa; Women, Food and Agriculture; Drake University Agricultural Law Center; Iowa Environmental Council; Humane Society of the United States; and Niman Ranch Pork Company.

The evening was billed as a “celebration of the Leopold Center for Sustainable Agriculture for its vision and leadership and support for a better Iowa.” NCRLC director Brother David Andrews presented the Leopold Center with the first annual International Local Food Prize to recognize the Center’s work at the forefront of this movement.

In addition to fellowship and good will, the evening produced the first gift (from Ames-area farmer Joe Lynch) for the “Friends of the Leopold Center” program. This group consists of people who contribute \$1,000 or more to the Center’s general fund.

The Friends of the Leopold Center is just one aspect of the fundraising efforts that have included a direct mail solicitation of gifts from Center adherents. Several longtime supporters of the Center have helped identify potential sources of outside income.

More than 158 individuals and organizations have contributed to the Center since the budget cut went into effect. (Donations were received from 122 Iowans.) Many of the gifts came with letters of support or notes encouraging the Center to continue its efforts on behalf of Iowa farmers.

The ISU College of Agriculture offered help by designating the Center as part of the official fundraising effort for the College’s arm of the ISU Foundation. This made it possible for the Center to take advantage of the staff and resources of the Foundation as it sought to generate additional revenue.





Leopold Center assists sustainable agriculture

graduate program

IOWA STATE UNIVERSITY IS EXTREMELY FORTUNATE TO BOAST THE NATION'S FIRST GRADUATE PROGRAM IN SUSTAINABLE AGRICULTURE (GPSA), REFLECTING THE CONCENTRATION OF FACULTY AND STAFF INTERESTED IN PROMOTING SUSTAINABLE AGRICULTURE PRINCIPLES.



*T*he Leopold Center has supported the program through the planning and inception stages and now provides financial backing for several students. Unlike more conventional assistantships, the Center's grants to the program are awarded to faculty/student teams working on specific topics.

During the past year, the Center provided funding for several graduates to continue their studies on behalf of sustainable agriculture:



>>> **Xiaofan Niu**, Shenyang, China, advised by X. B. Yang, plant pathology;

>>> **Karie Wiltshire**, Indianapolis, advised by Kathleen Delate, agronomy and horticulture; and

>>> **Erin Tegtmeier**, Chicago, advised by Mike Duffy, agricultural economics.



Niu is working with Yang on pathogens that cause stem rot in soybeans. Wiltshire, in cooperation with Delate's organic agriculture research, is interested in the use of native prairie grasses and forbs for managed grazing. Tegtmeier and Duffy have been investigating consumer behavior concerning local foods.



CENTER LOSES TWO

longtime employees

Peterson wins first

Spencer Award

David Peterson, a dairy farmer from Blue Grass, Iowa, was the first recipient of the Spencer Award for Sustainable Agriculture in August 2002. Peterson and his wife Amy manage a 90-cow dairy herd along with a genetic seedstock and replacement heifer business under the auspices of their Majestic Manor Dairy operation. Their diversified, 430-acre farm produces corn, no-till soybeans, and several forage crops, with only minimal use of purchased fertilizer. Management practices that Peterson adopted 22 years ago out of necessity have helped make his farm a model for sustainability, the sort of farming operation that the Spencer family wished to celebrate when they created the award in 2001.

The honor was presented in a ceremony during a livestock show at the Iowa State Fair. The award honors the memory of Norman and Margaretha Geiger Spencer who farmed for 40 years near Sioux City in Woodbury County. Peterson plans to use the accompanying \$1,000 cash award to refurbish an existing windbreak and establish a new grove of trees.



ONE OF THE LEOPOLD CENTER'S STRENGTHS HAS BEEN THE STABILITY OF ITS CORE STAFF DURING ITS FIRST 15 YEARS OF EXISTENCE. TWO LONG-SERVING, EXPERIENCED MEMBERS OF THE CENTER'S OPERATIONS LEFT THE ORGANIZATION DURING THE PAST YEAR.

Kenneth Anderson, who had been the Center's first and only account specialist, resigned in December 2002. Anderson ably shepherded Center staff through the maze of paperwork, rules, and financial twists entailed in managing hundreds of competitive grants, projects, educational events, and conferences. He maintained his sense of good humor and calm, even when dealing with a staff that was sometimes mathematically challenged. Anderson now works as a registered investment adviser in Ames. The Center's accounting duties are being handled by Amy Rogers, an administrative specialist, under a contract agreement with the College of Agriculture.

April Franksain, who was hired as secretary to then-director Dennis Keeney in 1991, eventually served as the office manager, events planner, remodeling supervisor, institutional historian, and wizard at cutting through red tape. She became the person staff members relied on far beyond the scope of her official duties. As the Center's "first responder," hers was the voice that the public often heard when they called and wrote or e-mailed the Center until her departure in May 2003. Franksain is now employed by the ISU College of Engineering. Her replacement, Sherry Johnson, is a transfer from within the ISU merit employment system.





APRIL 2000

The Leopold Center for Sustainable Agriculture launched a planning process to determine new directions and programs for the next decade. The process was begun at the behest of the Center's advisory board following a discussion with newly hired director Fred Kirschenmann in April 2000.

JULY 2000

Six prominent thinkers in the national sustainable agriculture community convened on July 21, 2000 to help shape the Center's future. Among them were Karl Stauber, John Gardner, Joan Dye Gussow, Cornelia Flora, Bill Heffernan, and Dick Levins. Their theme: "We need to ask the difficult questions, decide who we want to be, and how we can move agriculture toward sustainability."



FEBRUARY 2001

Community conversations 2001. The Center spoke with Iowa's rural citizens about the future of Iowa agriculture in February and March. Listening sessions were held in Sioux Center, Hiawatha/ Cedar Rapids, Mount Pleasant, Decorah, Lewis, and Greenfield.

MAY 2001

The Iowa legislature administers the Center's first-ever budget cut of \$250,000 in May 2001. Reductions were made in long-term research teams and the educational events program.

JULY 2001

The Center staff and board held a meeting July 24-25, 2001 with experts in the three initiative areas. These experts offered more specific advice for dealing with challenges in marketing, ecology, and policy. Professionals who attended: Mark Edelman, Dick Levins, Joe Lewis, Richard Manning, Theresa Marquez, Chris Mundt, Margaret O'Dell, and Michael Shuman.



Where have we been?
A PLANNING PROCESS

timeline



SEPTEMBER 2000

Leopold Center staff deliberations taking place from September 2000 to the present. The issue: How can we make the Center a more effective agent for change?

OCTOBER 2000

The Center obtains a grant from the Cavaliere Foundation in October 2000 to support activities that are part of the planning process.

NOVEMBER 2000

In November 2000, the staff met with the advisory board to present a plan for three new research initiatives to carry out the Center's mission. The board concurred and encouraged the staff to seek feedback from Iowans on the vision and initiatives.

SEPTEMBER 2001

"Niche and Value Added Marketing: What's in it for me?" conference held September 18, 2001. The event brought together producers and other players in the pork processing and sales businesses. Their discussions led to the formation of the Pork Niche Market Working Group (PNMWG). This group has involved 35 agencies and organizations including ISU colleges, centers, and departments. The PNMWG has supported ten projects through funding from the Value Chain Partnerships for a Sustainable Agriculture Project.



Following further conversations with Karl Stauber of the Northwest Area Foundation, the Center distributed a call for Leopold Projects and Partners 2001-2002. This was considered a transitional Request for Proposals and was issued in September 2001.

OCTOBER 2001

The initial final report on the planning process was submitted to the Cavaliere Foundation, October 8, 2001.





MARCH 2002

Community conversations 2002. The Center sought input from the critical urban/suburban audiences in three sessions held in March and April 2002. This was a chance to discuss why city dwellers should care about agriculture. Sessions were held in Sioux City, West Des Moines, and the Beaverdale section of Des Moines.

APRIL 2002

"Future of Iowa Agriculture: A Policy Discussion"—an invitation-only conference was held in April 2002. It addressed the role that policy choices play in the type of agriculture we will have in the future. Speakers included College of Agriculture Dean Catherine Woteki, Cooper Evans, Daryll Ray, Moura Quayle, and Karl Stauber.

MAY 2002

On May 28, 2002, the Iowa legislature transferred \$1 million to the state's general fund from the Leopold Center's earmarked funding in the Groundwater Protection Act. The Center decided to fund existing research projects but will seek no new research proposals during this fiscal year.

FEBRUARY 2003

"Concentration in agriculture: How much, how serious, and why worry?"—a second conference sponsored by the policy initiative attracted more than 200 people on February 4, 2003. Speakers included attorneys, sociologists, federal legislative aides, and economists.

Earmarked federal funding (\$210,000) from the U.S. Department of Agriculture was awarded to the ISU "hoop group" (founded by the Leopold Center) to continue its work on hoop barns for livestock production. The grant was made in early 2003.

APRIL 2003

The Leopold Center received a continuation of its earlier grant from the W.K. Kellogg Foundation to support work on VCPSA in April 2003. The \$560,000 award will help fund further efforts by the PNMWG.

Two of the Center's initiatives, Marketing and Food Systems and Policy, each issued carefully targeted requests for pre-proposals in April 2003. Plans are to fund the final proposals in FY2004.

MAY 2003

The Ecology Initiative continues to explore various alternatives for possible research directions. A trip to the University of Missouri in May 2003 looked at agroforestry options. Karl Rabago, sustainability alliance leader for Cargill-Dow, spoke on potential alliances between sustainable agriculture research and a major agribusiness corporation.



JUNE 2002

The Leopold Center was awarded a \$100,000 one-year grant from the W.K. Kellogg Foundation to support work on "Value Chain Partnerships for a Sustainable Agriculture" (VCPSA) in June 2002.

JULY 2002

A July 2002 meeting brought together 35 people who worked on the marketing and food systems projects that the Center had funded around the state. The gathering suggested ways that the Center could be a "catalyst and convener" for other activities under the Marketing Initiative.

SEPTEMBER 2002

On September 6-7, 2002 the Glynwood Center, near Cold Spring, New York, and the Leopold Center hosted a meeting at Glynwood for numerous organizations involved in sustainable agriculture to discuss how they could establish better communication between rural and urban communities around farm and food issues. Following that gathering, a representative group met to develop strategies to achieve some of the goals that had been identified.



DECEMBER 2002

The Pork Niche Market Working Group (PNMWG) through Practical Farmers of Iowa received a \$108,500 grant from the U.S. Department of Agriculture as part of the value-added rural development program in December 2002.

AUGUST 2003

The VCPSA project announces the formation of another team, the Bioeconomy Working Group. Led by Jill Euken of ISU Extension, the group began meeting in August 2003 with matching funds from the Iowa Energy Center, Dow-Cargill, and the U.S. Department of Energy.

The Masters of Business Administration (MBA) program at ISU will incorporate a sustainable agriculture minor for the fall semester of 2003. Two new graduate assistantships will be funded by the VCPSA project.

OCTOBER 2003

The Regional Food System Working Group, another offshoot of the VCPSA, was started in October 2003. It will integrate Leopold Center Marketing Initiative projects with other local and regional food system efforts.



PFI *on the move*

THE LEOPOLD CENTER CONTINUED TO PROVIDE \$50,000 ANNUALLY TO FUND PRACTICAL FARMERS OF IOWA (PFI) under an ongoing arrangement with the group. The money is used primarily to support the field days and on-farm research demonstrations under PFI sponsorship, although some funds also are used to assist with other PFI activities and to leverage other grant funds.

FIELD DAYS AND ON-FARM WORK:

More than 1,200 people attended 10 regularly scheduled research field days and other events on the farms of research cooperators. Among the responses from the 2002 attendees who returned evaluations:

- >> People traveled an average of 84 miles one way to attend the events.
- >> Of those farmers who attended, 62.5 percent reported they were considering changing at least one practice as the result of the field day.
- >> Ninety-six percent reported the field days met or exceeded their expectations.
- >> Forty-eight percent were not members of Practical Farmers of Iowa.
- >> Sixteen research cooperators carried out 23 replicated on-farm research trials.



OTHER CENTER-BACKED RESEARCH EFFORTS:

Leopold Center support for PFI research cooperators allowed them to pursue unique and cutting-edge research questions and facilitated their collaboration with ISU scientists on additional projects. Among them were:

- Livestock trials focused on management of gastrointestinal parasites in organic systems (collaborator: Dr. George Beran, ISU Veterinary Medicine, retired); and *Salmonella* prevalence in alternative swine systems (collaborators: Dr. Scott Hurd, National Animal Disease Center, and Beran).
- PFI on-farm research facilitated collaboration with the Michael Fields Ag Institute (Walter Goldstein) and ISU corn breeder Kendall Lamkey on varieties of high-nutritional value corn for which farmers can save and replant seed.
- PFI participation in research by ISU scientists (led by Lance Gibson) on the adaptation of new varieties of triticale to Iowa farms.

Successful

spin-offs from earlier Center efforts



- PFI participation in the Pork Niche Market Working Group (PNMWG) led to a \$150,000 grant from the North Central SARE Program for a project called the *Research Alliance for Farrowing*. The project will strengthen working relationships among field veterinarians, ISU scientists, and farmers using alternative swine production systems.
- PFI farming systems program helped facilitate PFI's participation in an interdisciplinary study of the agronomic, economic, and social effects of integrated farming, a three-state project funded by the U.S. Department of Agriculture-Integrated Farming And Farming Systems program.
- Leopold Center support for an interdepartmental advisory board to the PFI farming systems program helped PFI increase awareness of on-farm research opportunities among ISU faculty.

THOMPSONS RECEIVE AWARD

Farmers Richard and Sharon Thompson of Boone, who pioneered PFI's on-farm research network, received the National Seventh Generation Award, which is sponsored by the Center for Rural Affairs and the Consortium for Sustainable Agriculture Research and Education (CSARE). Leopold Center support for on-farm research over the years has been instrumental in cultivating the capabilities in Iowa farmers that this award recognized.

Three interdisciplinary research groups that were founded and funded by the Leopold Center for a number of years have continued to thrive even with the cessation of Center financial support at the end of FY2002. The Center can point with pride to three flourishing offspring of its early commitment to the virtues of multi-faceted research.



The seven-member **Alternative Swine Production Research Group** (usually referred to as the "hoop group") has moved beyond its original strong connections to hooped swine barns to pursue other related animal production projects. Thanks to a \$210,000 grant from the U.S. Department of Agriculture, the group will study economics, marketing, and total swine production systems, as well as continuing to investigate the most effective use of hooped houses for various categories of swine and other livestock.



The **Agroecology Issue Team**, which was begun by the Leopold Center in 1990, was honored by Iowa State University for its long-term efforts to enhance local watershed management systems. The five-member group received the College of Agriculture's highest award for interdisciplinary research—the Team Award—in February 2003. The team created the Bear Creek Watershed project that has received national honors for innovation through streambank restoration.



The **Animal Management Issue Team** has continued to conduct research that improves the profitability of beef cow-calf production. To study the effects of grazing management on sediment and phosphorus losses, the team has demonstrated that rotational grazing to sward heights of 2 or 4 inches reduces sediment and phosphorus losses from pastures considerably compared to continuous grazing to a sward height of 2 inches. This work is associated with an on-farm study being conducted by Richard Schultz from the ISU's natural resources and environmental management

department and other members of the Leopold Center's former Agroecology Issue Team. Their major outreach effort was the development and participation in the Integrating Forage and Cattle Resources educational series along with the NC-225 Regional Project, the Northern Integrated Resource Management Group, and the National Cattleman's Association.

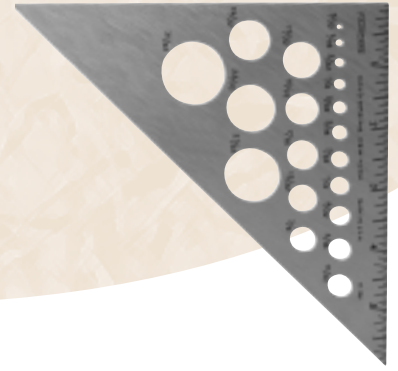
ISU Research Farms are
HOME FOR for many
organic crop studies

THE LEOPOLD CENTER HAS PROVIDED SUPPORT FOR SEVERAL LONG-TERM STUDIES OF ORGANIC CROPS WITH ECONOMIC POTENTIAL FOR IOWA FARMERS. AN ORGANIC INITIATIVE WAS BEGUN IN 1997, AND THE CENTER HAS CONTINUED TO FUND SEVERAL RELATED PROJECTS SINCE THE CONCLUSION OF THE INITIATIVE PROGRAM IN 2002.



*O*rganic crops research at Iowa State during FY03 was conducted by Kathleen Delate of the horticulture and agronomy departments along with ISU research associate Heather Friedrich, and Cindy Cambardella of the National Soil Tilth Laboratory in Ames. Many of the experiments are ongoing at the ISU Neely-Kinyon Farm near Greenfield. Complete research reports can be found at <http://www.ag.iastate.edu/farms/reports.html>

* Photos on pages 16-19 provided by Kathleen Delate.



Projects at Neely-Kinyon Long-Term Agroecological Research (LTAR) site, 2002, included:

COMPARISON OF ORGANIC AND CONVENTIONAL CROPS

The Neely-Kinyon LTAR was established in 1998 to study the long-term effects of organic production in Iowa. Treatments replicated four times at this site include the following rotations: conventional Corn-Soybean (C-S), organic Corn-Soybean-Oats/Alfalfa (C-S-O/A), organic Corn-Soybean-Oats/Alfalfa-Alfalfa (CS-O/A-A), and soybean-wheat (S-W). Conventional corn yields (179 bu/acre) were significantly higher than organic corn yields in 2002, although organic yields were excellent at 171 and 161 bu/acre. A significantly greater level of soil nitrate-N was found in conventional corn plots in late spring compared with organic plots. Corn yields were significantly greater after a full year of alfalfa compared with the organic C-SB-O/A rotation. Soybean yields were highest in the CSB-O/A and C-SB-O/A-A organic plots, averaging 47 bu/acre. Organic oat and wheat yields averaged 116 bu/acre and 69 bu/acre, respectively. Alfalfa yields over the two treatments averaged 2.22 tons/acre.

SWEET CORN VARIETY AND PEST MANAGEMENT TRIAL

With the growing numbers of organic food consumers, premium prices can be obtained for organic sweet corn from Iowa. With the potential for major markets across the United States, research on production, harvesting, and processing protocols is needed to meet this demand. One of the key pests in organic sweet corn production is the corn earworm. Earworm control was improved through the addition of a certified organic spreader-sticker in preliminary tests in 2001. This project investigated variety selection for early markets and the efficacy of the naturally occurring soil bacterium, *Bacillus thuringiensis* (Bt), for improved pest management of the corn earworm at the Neely-Kinyon Farm.



EDAMAME (VEGETABLE SOYBEAN) VARIETY TRIAL

Interest in edamame, or vegetable soybeans, has increased in the United States in recent years. Edamame soybeans are harvested immaturesly, similar to green beans, and have less of a "beany flavor," which appeals to American consumers. Edamames are boiled and served either in or out of pods, and are usually eaten as a snack or in soups, salads, or as a vegetable dish. In 2001, edamame research trials were established in organic fields at the ISU Neely-Kinyon Farm and their produce processed at Iowa State University to determine yields and taste. Three varieties of edamame soybeans were planted. There were no significant differences among varieties for stand counts at the N-K farm. Bean leaf beetles were present in these trials, although plant health was not impacted. Significantly higher yields resulted when edamames were hand harvested as opposed to machine harvested. Greater harvesting efficiency will develop over time, as operators become more familiar with machine adjustments and the proper speed of operation. In addition to the challenges of determining which varieties perform best in terms of yield, seed size, taste, color, and nutrition, harvesting is an area requiring further study.



EVALUATION OF SOYBEAN VARIETIES FOR CERTIFIED ORGANIC PRODUCTION

Bean leaf beetles have continued to be a problem for organic tofu soybean producers throughout the Midwest because of the resulting seed staining, which can downgrade the quality of the soybeans at market. Beginning in 2000, soybean varieties were evaluated at the Neely-Kinyon Farm for yields and percentage staining under organic production methods. Despite the preference for Vinton soybeans by Japanese organic tofu manufacturers, these soybeans have numerous problems in southwest Iowa. They had a significantly lower plant population compared with all other varieties. There were no significant differences in bean leaf beetle populations among varieties, but one variety had a significantly lower percentage of stained soybeans compared with all other varieties. In 2003, evaluations continued on the effects of genotype (through variety trials) and environment (through organic treatment trials) in mitigating the bean leaf beetle problem in the Midwest. Producing organic soybeans of higher quality than the Vintons will help gain acceptance from Japanese tofu manufacturers.



COMPOST RATE STUDY

Many farmers are interested in using manure and compost as sources of nutrients and microbial populations that are necessary for nutrient cycling in agro-ecosystems. Compost and synthetic fertilizer effects on corn yields and soil fertility have been compared in a Practical Farmers of Iowa cooperative trial at the Neely-Kinyon Farm since 1999. In 2002, corn yields in the compost trial ranged from 96 to 160 bu/acre. The highest yields were obtained from plots that were treated with 12 tons of compost in 2001 and 60 lb synthetic N in 2002, demonstrating a strong residual effect from the 2001 compost application. Organic corn yields (from plots that received no synthetic nitrogen in either year) ranged from 95.8 in the control (no nitrogen) to 114.2 bu/acre in the plots that received 18 tons of compost in 2001 and no nitrogen in 2002. There were no significant differences in corn borer populations among treatments.

EVALUATION OF ORGANIC PEST MANAGEMENT TREATMENTS FOR BEAN LEAF BEETLE

Bean leaf beetles (BLB), which can cause seed staining, are a problem for Midwestern organic tofu soybean producers. Beginning in 2000, evaluations were conducted of various organically approved treatments for bean leaf beetle and fungal control. Among them were several commercial preparations, baking soda, 3 percent hydrogen peroxide, fish oil, and molasses. All treatments were compared with a control. Treatments did not significantly affect soybean yields or percentage of stained soybeans. Over the entire experiment, an excellent average yield of 54.5 bu/acre with 8.8 percent staining was obtained. At the BLB population peak, there were no significant differences among the treatments. There also were no significant differences in beetle populations among treatments over the entire season. Although the percentage of stained soybeans in this experiment averaged below the 15 percent that would downgrade tofu soybeans to feed grade (Heartland Organic Marketing Cooperative, Stuart, IA), evaluations will continue on the effects of genotype (through variety trials) and environment (through organic treatment trials) in mitigating the bean leaf beetle problem in the Midwest.



EVALUATION OF CORN, SOYBEAN AND BARLEY VARIETIES FOR CERTIFIED ORGANIC PRODUCTION, CRAWFORDSVILLE TRIAL, 2002

Beginning in 1998, a long-term crop rotation experiment was initiated to examine the effects of organic practices on crop yield, soil quality, and grain quality. A minimum three-year crop rotation is required for certified organic crop production (National Organic Program, 2002). Organic fields at the Southeast Research Farm follow a rotation of corn-soybean-barley/red clover. This is the fifth year of production—the second year of the row crop (corn or soybean) following a full three-year rotation. Treatments in 2002 at the Southeast Research Farm consisted of three varieties of corn and soybeans, and four varieties of barley with four replications of each variety. There were significant differences among varieties in stand counts at 28 days after planting. Corn yields were not significantly different among varieties, averaging 140.6 bu/acre. Stalk nitrate content was not significantly different among varieties. There were significant differences in moisture, starch, and density in corn grain quality, but not in protein levels, which averaged 7.7 percent. All soybean varieties yielded well, despite the lack of rain throughout the season. Significant differences in soybean grain quality were found in the percentages for moisture, protein, oil, and carbohydrates. Barley yields among the varieties were not significantly different. Despite the lack of rain and the abundance of grass weed populations in 2002, organic crop yields were greater than 2001, with continued excellent grain quality.



EVALUATION OF TILLAGE AND CROP ROTATION EFFECTS IN CERTIFIED ORGANIC PRODUCTION, MCNAY TRIAL, 2002

Across the North Central region, where up to a 300 percent premium can be obtained for organic compared to conventionally raised soybeans, there has been great interest in planting organic soybeans on Conservation Reserve Program (CRP) land. Regulation of soil organic matter through additions of plant residues and proper crop rotations will determine the long-term sustainability of the system. This project involved the establishment of a long-term agroecological research (LTAR) site in southeast Iowa at the McNay Memorial Research Farm near Chariton. Approximately two acres of a five-year-old forage field (bromegrass and alfalfa) were allotted to the project. Bromegrass predominated in the field, as is typical of CRP land in this area of the state. Forty-eight plots (four tillage treatments, three crops and four replications) were laid out in a randomized complete block design in September 1999. Each crop of the rotation was planted each year beginning in 2000.

Both corn and soybean plots yielded very well in 2002, although oat yields were impacted by lodging due to winds and rain. There were no significant differences among the tillage treatments in corn plant populations or in soybean stand counts. No significant yield differences were determined among treatments in oat, corn or soybean plots. Corn yields showed a trend towards higher yields in plots that were fall-plowed. There were no significant differences among treatments in corn or soybean grain quality in 2002. Overall, 2002 organic crop yields at the McNay LTAR site were among the highest organic crop yields in the state.

Policy Initiative

explores concentration in agriculture

SEEKS RESEARCH

*The goals of the
policy initiative
are to:*

Help beginning
farmers enter
ecologically sound
and profitable
farming and
marketing
operations

Reward farmers for
producing public
goods such as
ecologically restored
landscapes, wildlife
habitat, recreational
areas, etc.

Modify regulations
that put locally owned
micro-enterprises
at a competitive
disadvantage

CONCENTRATION CONFERENCE A SUCCESS

"Concentration in agriculture: How much, how serious, and why worry?" drew a crowd of more than 200 people to Ames on a very snowy day in February 2003. Conference organizer Mike Duffy, the Center's associate director, noted that consumers, farmers, local businesses, and rural communities all have a large stake in the outcome of the present rush toward a global food system operated by a few large conglomerates.

Six respected speakers addressed the problems and opportunities springing from the increased industrial concentration in all areas of agriculture. Among them were:



**Current
level of
concentration
in production,
processing,
and retailing**

**Mary
Hendrickson**,
Extension
Associate,
Network
Coordinator,
Food Circles,
and Extension
Assistant
Professor, Rural
Sociology,
University of
Missouri,
Columbia



**Economic
impact and
impacts of
continuing to
proceed as
we are now**

Neil Harl,
Charles F. Curtiss
Distinguished
Professor in
Agriculture,
Professor of
Economics, and
Director, Center
for International
Agricultural
Finance, Iowa
State University



**Anti-trust
actions:
History
and current
situation**

Doug Ross,
Special Counsel
for Agriculture,
Antitrust Division,
U.S. Department
of Justice



**Farmer
responses:
Collective
bargaining,
new
generation
cooperatives,
value-added
agriculture**

Richard Levins,
Professor of
Applied
Economics,
University of
Minnesota,
St. Paul

**Alternative
policy
options:
Federal
and state**

Doug O'Brien,
Counsel for
Senate Committee
on Agriculture
and aide to
Senator Tom
Harkin (D-IA);
and **Mark
Reisinger**,
agricultural
legislative aide
to Sen. Charles
Grassley (R-IA)

PROPOSALS

"THE LEOPOLD CENTER FOR SUSTAINABLE AGRICULTURE HAS IDENTIFIED THE POLICY ARENA AS A MAJOR COMPONENT OF DEVELOPING AND IMPLEMENTING SUSTAINABLE AGRICULTURE PRACTICES AND SYSTEMS. IT IS OUR HOPE THAT THE WORK IN THIS AREA WILL HELP INFORM POLICY MAKERS AND STIMULATE CREATIVE THINKING ABOUT POTENTIAL POLICIES AND THE CONSEQUENCES OF THOSE POLICIES," SAYS MICHAEL DUFFY, WHO IS IN CHARGE OF THE POLICY INITIATIVE RESEARCH AND OUTREACH EFFORTS.

"POLICY AREAS OF INTEREST" CITED FOR SPRING 2003 POLICY RFP

The Policy Initiative issued a request for proposals in May 2003. Agricultural policy research would most desirably provide background information to help formulate policy and/or analyze the impact of policies. These were the targeted areas identified for prospective research projects:

- >> Diversifying the landscape
- >> Use of Conservation Reserve Program
- >> Alternative definition of a farm
- >> Farmer producer groups
- >> Impact of regulations on sustainable agriculture
- >> Potential programs to aid small, beginning, and/or retiring farmers
- >> Impact and implementation of watershed level management

More than 20 preproposals were received and eight submitted full proposals for review in fall 2003.

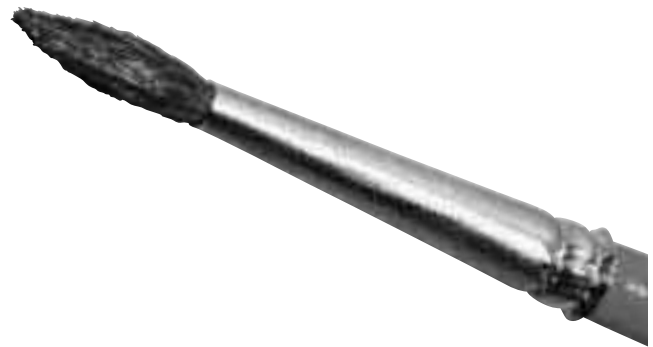
POLICY INITIATIVE FUNDS WORK ON RURAL EVOLUTION

American Country Life: A Legacy, by Gene Wunderlich, was published with support from the Leopold Center's Policy Initiative. The book, available from the University Press of America, recounts the history of the American Country Life Association (ACLA) from 1919 to 1976.

The ACLA, an umbrella organization of rural interest groups, offered a significant forum for discussing rural and agricultural issues. Volunteers from universities, government agencies, and farm organizations operated the ACLA. Wunderlich, a longtime U.S. Department of Agriculture official, uses the lifetime of the ACLA as a framework for examining U.S. country life and policies in the 20th Century. While it was closely tied with the fortunes of agriculture, the ACLA also addressed broader issues of concern to a rapidly changing rural society.

BRITISH PROFESSOR TALKS ON WAYS OF TRANSFERRING FARMLAND

John Hambly, University of Essex agricultural economist, visited Iowa State in June to share results of his academic research on farm succession and farm transitions, two key issues being considered by the Policy Initiative. He met with ISU economics professors and ISU Extension farm management specialists. In addition, he worked with staff at the Beginning Farmer Center, where Mike Duffy is the professor-in-charge. Duffy said of the visit, "It was a mutually successful exchange of information about how farmers make the transition from actively working the land to becoming retired or semi-retired."



ECOLOGY INITIATIVE

explores options

ONE OF THE MOST IMPORTANT AREAS OF RESEARCH FOR THE CENTER THROUGHOUT ITS EXISTENCE HAS BEEN THE WORK CONNECTED WITH IMPROVING IOWA'S AGRICULTURAL ENVIRONMENT AND SUPPORTING ALDO LEOPOLD'S LAND ETHIC. IN THE CENTER'S MORE FOCUSED INITIATIVE PROGRAM, THIS CATEGORY OF RESEARCH EFFORTS IS NOW DEFINED AS:



Ecology: development of ecologically friendly systems which are more resilient and less costly to farmers, communities, and the environment.



*I*nitiative leader Jeri Neal says, “We know what we want—healthier people and healthier landscapes. We have an idea of what could give us that goal—systems designed to mimic the structure and function of natural ecosystems. But there is no cookie cutter for this. I see the initiative work being characterized mostly by transition, activities ranging from farm to watershed level that help us to reintegrate people and agriculture and landscapes in a mutually beneficial manner.”

CARGILL-DOW LEADER TALKS SUSTAINABILITY

Karl Rabago, then-sustainability alliances program leader for Cargill-Dow LLC, visited ISU March 31-April 1, 2003 to talk with various groups about the many possibilities for his corporation to link with Iowa's sustainable agriculture components. The Center's Ecology Initiative helped bring together Rabago, farmers, ISU faculty and staff, and Iowa agribusiness officials for a frank and rewarding discussion about current Cargill-Dow bio-based products as well as long-term goals for the company to develop a fully sustainable renewable plastic. European consumers are providing some of the immediate impetus for bio-based and/or non-GMO products and packaging. But Rabago points out that Cargill-Dow aims "to make the feed stocks for our products ultimately sustainable. In order to do that, we believe we must establish a connection back to the farm."



ROAD TRIP TAKES ECOLOGY INITIATIVE TO MISSOURI AGROFORESTRY SITE

What is the potential for woody agriculture in the Iowa landscape if producers move away from whole-scale commodity farming? How can producers combine conventional agricultural pursuits with more environmentally-friendly agroforestry efforts? What are the risks and benefits of adopting an agroforestry strategy?

These are some of the intriguing questions that may spur considerably more investigation by the Ecology Initiative. In May 2003, program leader Jeri Neal organized a trip to the University of Missouri-Columbia's Horticulture and Agroforestry Research Center (HARC). The fifteen-member traveling party toured the 650-acre farm, surveyed several research projects, and heard presentations by the HARC staff on their activities.

The options being studied at HARC run the gamut from alley cropping to silvopasture, to forest farming of specialty crops. Neal said the group appreciated the emphasis HARC placed on "productive conservation" and felt that offered some definite avenues of exploration for Iowa's agricultural landscapes.

BROAD THINKING ABOUT BASIN-LEVEL PARTNERSHIPS

The Ecology Initiative plans to work across several stages from farm level to watershed. Initiative leader Jeri Neal explains the thinking that has led to exploration of watershed and basin level efforts:

“Important choices face agriculture. Research has traced the source of 40 to 50 percent of the nitrogen streaming into what is termed the “dead” or “hypoxic” zone of the Gulf of Mexico to three states — Iowa, Minnesota, and Illinois. The majority of these nitrogen deposits are a direct result of the farming practices used on the Midwest landscape, with substantial impact on aquatic life and the fishing and tourism industries. Within our own communities, flood hazards, water quality, and soil loss are increasingly costly. Farmers are leaving the land. Additionally, the use of land for commodities to the exclusion of all other uses has the public paying twice, with costs borne in subsidies as well as damages. Our nation now has a renewed interest in bioenergy and food security. So we have tremendous opportunities to look for ecologically sound, profitable alternatives to current practices and proposed regulations, but they have to be outside as well as inside the farm.”

Under the leadership of the University of Minnesota, agencies in Minnesota, Wisconsin, Iowa (including the Leopold



Center), Illinois, Missouri, and Louisiana are developing a ten-year, multi-million dollar effort to leverage change on nearly 9 million acres in strategic Midwest watersheds. This reassessment of the potential of the Midwest landscape will have measurable results and create viable watershed models for the entire Mississippi River Basin. The objectives are fairly simple: optimize agricultural production on specific landscapes, facilitate land use change to create ecological buffers and water management areas, and diversify land use to increase production of perennials for bio-based and energy crops.

Various sources of funding, governmental and private, are being explored by all the partners. Initial and critical early activities would be pieces that could be leveraged for further resources and partners and that might include mini-grants to watersheds; Geographical Information Systems (GIS) technical assessments; policy design; and demonstration.

SPECIAL PROJECTS UNDER ECOLOGY INITIATIVE AUSPICES

Effects of biomass harvest on soil erosion and carbon sequestration, (E7-2003)

T. Richard, ISU agricultural and biosystems engineering

Water Erosion Prediction Project (WEPP) simulation models were used to study the effects of biomass harvest on erosion and soil carbon under typical Iowa conditions. Several cropping systems were considered, including corn stover and other crop residues harvested as raw material for bio-based manufacturing and energy production. Erosion at different crop residue removal rates was compared on different soils and on different slopes, and showed that soil type had a smaller effect on erosion than did slope or biomass removal rate.

Implementing a leafy spurge (*Euphorbia esula* L. or *E. x pseudovirgata*) biological control agent release and monitoring program in Iowa, (SP Spurge-2004)

R. Pope, B. Hartzler, J. DeWitt, ISU entomology

The perennial leafy spurge has been a problem because of its stout rhizomes, lack of palatability to grazing animals, and quick regrowth. Students at Dordt College in Sioux Center will be trained to identify leafy spurge and spurge flea beetles that feed on the plants to document significant infestations in Sioux, Ida, and Dickinson counties in northwest Iowa. Investigators hope to establish beetles in selected leafy spurge infestations during the first year and monitor their effectiveness at controlling leafy spurge during subsequent years of the project.

Marketing & FOOD SYSTEMS INITIATIVE

*links farmers, value chains,
and healthy messages about local food*

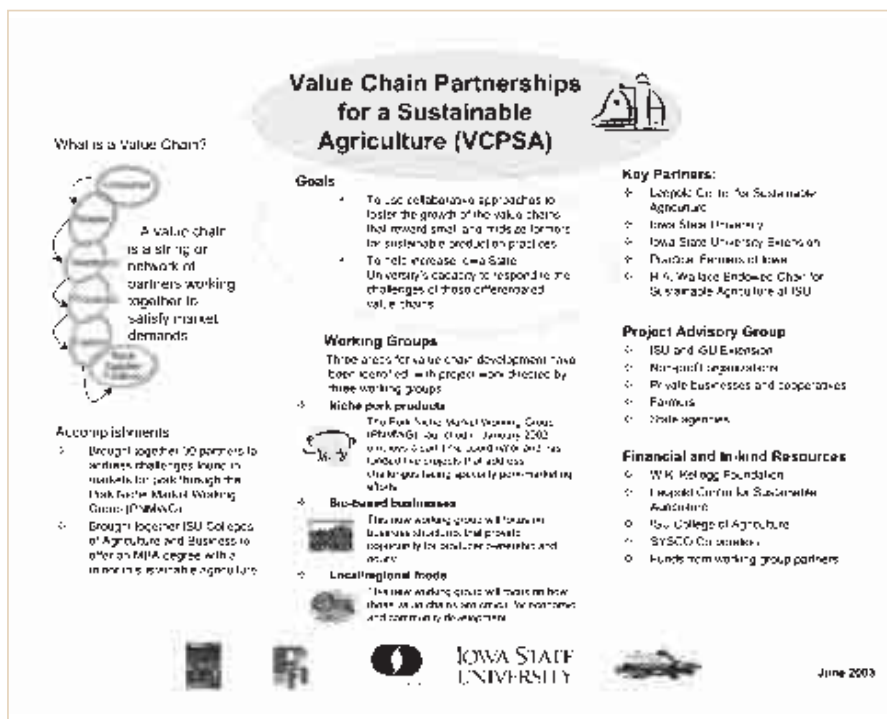
THE LEOPOLD CENTER'S
MARKETING AND FOOD SYSTEMS
INITIATIVE HAS ESTABLISHED
THESE GOALS:

- >> Research and test new marketing strategies and business structures that allow Iowa's small and midsize producers to retain more of the value for food, fiber, or energy produced with high standards of environmental and community stewardship,
- >> Develop farmer opportunities for levels of ownership, equity, and/or influence within the value chain, and
- >> Research and document economic, environmental, and community impacts of local and regional food, fiber, and energy value chains to determine best how farmers, processors, and agricultural entrepreneurs can use this information in their market messages.

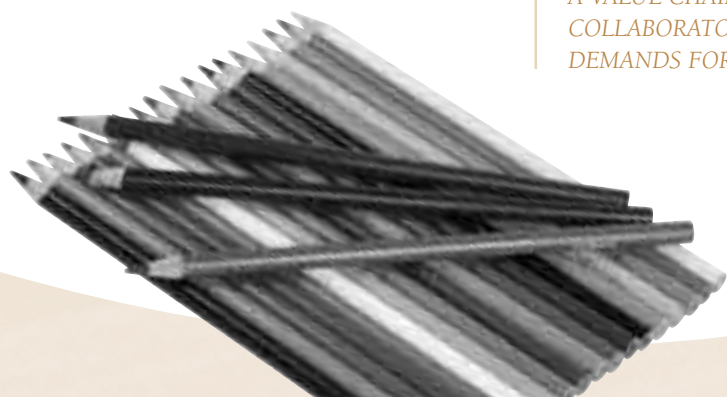
According to Marketing and Food Systems program leader Rich Pirog, this initiative has made significant strides toward helping farmers market food more profitably and with respect for the environment. He cites a number of major efforts underway as part of the Marketing and Food Systems Initiative.

KELLOGG FUNDS EXTENSIVE VALUE CHAIN WORK

The Value Chain Partnerships for a Sustainable Agriculture (VCPA) project funded by the W. K. Kellogg Foundation's Food and Society Initiative began in July 2002 with a \$100,000 planning grant. In March 2003, the project received another \$560,000 Kellogg Foundation grant to continue work through 2005. Other financial and in-kind resources come from the Leopold Center, Iowa State University (ISU), the ISU College of Agriculture, and the SYSCO Corporation. **Three working groups, each focused on a different value chain, operate under the auspices of VCPA.**



A VALUE CHAIN IS DEFINED AS A STRING OF COMPANIES OR COLLABORATORS WHO WORK TOGETHER TO SATISFY MARKET DEMANDS FOR SPECIFIC PRODUCTS AND SERVICES.





The Pork Niche Marketing Group

(PNMWG) began its second year of helping farmers develop highly differentiated pork value chains that are profitable to all participants, incorporate farmer ownership and control, and contribute to environmental stewardship and rural vitality. More than 30 organizations play a role in the PNMWG.

The Regional Food Systems Working Group held a forum to develop objectives and an operating framework in spring 2003. It will help research and identify economic, environmental, and community impacts for local and regional foods.

Another new group, **the Bioeconomy Working Group**, also was launched in spring 2003. Its focus will be producer ownership and equity issues in bio-based product supply chains.

Andrew Hug, who had been employed by the ISU College of Family and Consumer Sciences, was hired as the program assistant for the VCPSA project and the marketing initiative in June 2003.

FOOD ROUTES AND MIDWEST COLLABORATORS PROJECT SURVEYS CONSUMER ATTITUDES

The Leopold Center participated in a multi-phase research project with Food Routes and several midwest partners to help create communication messages and strategies for farmers and cooperatives who want to market pasture-raised beef, pork, dairy products, and lamb directly to consumers.

A key element of the project was the "Pasture-Raised Products Message and Strategy Focus Group Study" conducted in October and November 2002 in six Midwestern cities. These focus groups searched for key marketing messages that producers of pasture-raised products could use to promote their wares. Participants in these groups were asked to offer their impressions of the terms free range, pasture raised, grass fed, and natural. They also were asked how each term, if they were to see it on a meat, poultry or dairy product, would affect their perception of the product's value. Pasture raised emerged as the label with the most positive attributes in these focus groups.

INITIATIVE CALL FOR PREPROPOSALS RELEASED

The Marketing and Food Systems Initiative issued a carefully targeted call for pre-proposals in May 2003. More than 20 pre-proposals were received and a dozen of them submitted full proposals later in the year.

NEW PAPER COMPARES LOCAL AND CONVENTIONAL FOOD MILES FOR PRODUCE

Summer 2003 saw the release of a new paper detailing how many miles food travels from farm to consumer. "Checking the Food Odometer" showed that locally grown produce traveled an average of 56 miles from farm to point of sale, while the same types of produce from conventional sources within the United States traveled an average of 1,494 miles — nearly 27 times farther — to reach the same points of sale.

Rich Pirog and ISU student Andrew Benjamin looked at produce sales transactions to institutions that participated in an "All-Iowa meal" brokering project coordinated by Practical Farmers of Iowa (PFI) in 2001 to obtain their comparisons. "We wanted to know how the miles logged by Iowa fresh produce arriving at institutions compared to miles logged if this produce had come from more conventional locations across the country," Pirog noted.



SPECIAL PROJECTS CONDUCTED BY THE MARKETING AND FOOD SYSTEMS INITIATIVE

Case studies of the development and efficacy of pasture-raised meat marketing messages: Iowa lamb case study

**J. Ennis, Cooperative Development
Services, St. Paul, MN**

This project funds a case study of an Iowa lamb producer to develop strategic marketing messages for pasture-raised meats. The larger project includes six case studies of beef, dairy and poultry producers in Iowa, Minnesota, and Wisconsin. Other partners are the ISU Extension Value-Added and Sustainable Ag programs, Practical Farmers of Iowa, Minnesota Institute for Sustainable Agriculture, and Wisconsin's Center for Integrated Ag Systems.

Evaluating on-farm food handling practices and microbiological quality of locally grown produce and eggs

**C. Strohbehn and D. Henroid, ISU hotel,
restaurant and institution management**

Horticulturists and food scientists are taking a closer look at how to address consumer concerns about the cleanliness and purity of locally grown produce and eggs. The project lists these goals:

- >> Increase fruit and vegetable growers' and fresh shell egg producers' awareness and understanding of harvest, post-harvest and delivery practices consistent with good agricultural practices and methods of assessment in qualitative research,

- >> Increase fruit and vegetable farmers' and fresh shell egg producers' knowledge about issues of food safety when supplying restaurant and institutional foodservice establishments, and

- >> Identify areas for improvement in production practices of fresh produce and shell eggs to minimize risks of food-borne illness.

A project team comprised of representatives from organizations interested in the safety of direct-marketed foods met in May 2003. Producers with interest in improving production practices to minimize risk of food-borne illness were invited to participate. Fourteen producers selected to participate in the education pilot project received a packet of food safety materials (Cornell University booklet, video, Extension handouts, other). The project coordinator and a member of the project team made site visits to each of the producer's farms. The site visits included an assessment of current practices and an interview with the producer to identify concerns related to harvest, post-harvest and delivery practices.

Cost data collection and analysis for alternative pork systems

D. Stender, ISU Extension, Cherokee

The Pork Niche Market Working Group is working with northwest Iowa pork producers to gather production costs that can be used for business planning and with lenders to better inform entry and expansion into niche pork markets.



ECOLABELS — HOW VALUABLE ARE THEY?

Ecolabels are a new way of educating consumers about the environmental footprint left by the food they purchase. A study funded by the Marketing and Food Systems Initiative and conducted by the ISU Business Analysis Laboratory during the summer of 2003 provided extensive data on consumer reactions to eco-labels, as measured in focus groups and via web-based surveys conducted in the Upper Midwest and the Seattle and Boston metropolitan areas. An extensive report on the results has been prepared for publication in November 2003.

(For more information, see:

Ecolabel Value Assessment Project,
(MSP3-2004) *T. DeCarlo and M. Upah,*
ISU College of Business and Papajohn
Entrepreneurial Institute.)

MARKETING INITIATIVE SPONSORS SPEAKERS

Arlin Wasserman, a Food and Society Policy Fellow of the W.K. Kellogg Foundation, visited Iowa State University in March. His presentation dealt with



the “taste of place,” the concept that food has an ability to capture the taste of the place where it’s grown. (The French have a word for this phenomenon—*terroir*.) Wasserman

pointed out how marketers can take advantage of the qualities that identify a food from a unique place.

Ken Meter, president of the CrossRoads Resource Center in Minneapolis, met with interested food systems and marketing groups at ISU on June 13th. Meter is the co-author of “Finding Food in Farm Country,” an incisive analysis of the food economy in southeast Minnesota (<http://www.crcworks.org/ff.pdf>). His analysis has been used as a core tool to found a regional direct marketing cooperative and Meter fielded questions about how direct marketing might work more effectively in Iowa.

GRANTS WORK

supports three

Initiatives



*T*hirteen new grants began work in FY2003 following a limited call for proposals in fall 2001. They were considered and selected in terms of their relevance to the Center’s three initiatives. These initiatives sought research projects that focused on:

MARKETING AND FOOD SYSTEMS: promotion, development, and discovery of markets for food, fuel, and fiber that support vibrant local communities and protect natural resources;

ECOLOGY: development of ecologically friendly systems that are more resilient and less costly to farmers, communities, and the environment; and

POLICY: analysis and development of new food, agriculture, and natural resource policies that are community, farmer, and environmentally friendly.

After the May 2002 budget cuts, the grant project leaders were told that the Center could only guarantee funding for one year. The time period listed is the project period set for completion of the project, with or without Center funding.





Alternative farrowing systems during cold weather, 2 years

M. Honeyman, ISU Research Farms;
J. Harmon, ISU agricultural and biosystems engineering; and **J. Kliebenstein, ISU economics**

Many of the new pork niche markets have requirements for farrowing outdoors or indoors in bedded pens, which makes winter farrowing difficult and results in a scarcity of marketable fresh pork during the summer. Management skills and tools to support winter farrowing are not well developed. This project monitored winter farrowing at ISU's Allee Farm and visited other Iowa operations to identify equipment and management to support winter farrowing.

Biological control of the soybean aphid in organic and sustainable soybean production systems, 3 years

J. Zhu, ISU entomology; **R. Exner, Practical Farmers of Iowa** and **ISU Extension**

Soybean aphids were first detected in Wisconsin in 2000, then throughout the upper Midwest in 2001, and they continue to spread with more than 20 states reporting infestations. The damage they cause can lead to yield losses of more than 50 percent. This project explores novel biological management options in field situations. These will offer soybean growers (especially organic soybean growers) useful methods to suppress aphid infestations by manipulating beneficial insects via newly developed attractants in the field. Investigators will continue to work intensively with PFI cooperators during the third-year farm trials.

Developing prototypes of environmentally sustainable family-owned beef feedlots in the Elk River watershed, 3 years

B. Van Laere, USDA-Natural Resources Conservation Service (NRCS), Clinton County;
J. Zacharakis-Jutz, ISU Extension

Second-year goals were to develop and implement an effluent management system on one or two prototype feedlots that meets minimum NRCS requirements including on-site monitoring and educational activities. The project team will work with the Iowa Department of Natural Resources and the NRCS to develop a comprehensive water monitoring plan for Elk River Watershed with a baseline for measuring future treatments.

Development of potential savanna/prairie conservation models for southern Iowa, 1 year

D. Sand, Iowa Natural Heritage Foundation (INHF)

The INHF seeks to design and begin to implement a viable prairie sector conservation model to accomplish savanna and prairie restoration in harmony with agricultural and economic interests in southern Iowa. The Leopold Center contribution to the project includes assistance with a report that addresses cooperative responses to the management of savanna/prairie lands by recreation land owners and beef producers.

Integrating hunting and grazing: A southern Iowa investigation into management issues, 1 year

J. Lawrence, Iowa Beef Center;
J. Pease, ISU animal ecology; and **D. Otto, ISU economics**

Investigators evaluated bird use in cool- and warm-season grass pastures and then used the information to make assessments of management practices that might encourage multi-functional land use for hunting and grazing. Surveys and focus groups assessed the interest among farmers and communities about the long-term impacts of rural outdoor recreation. Hunters were queried about the hunting habitat in southern Iowa.

Squaw Creek watershed – Rapid assessment of water quality and natural resource knowledge and beliefs, 1 year

M. Wagner, ISU landscape architecture; **J. Cooper, Prairie Rivers RC&D, Nevada**

Past attempts to organize watersheds have met limited success. The investigators conducted a knowledge and beliefs assessment across the Squaw Creek watershed. Findings highlighted some of the differences in perceptions among residents with agricultural ties compared to those in other stakeholder groups.



Marketing & Food Systems Initiative

Grinnell area local food system initiative, 2 years

J. Andelson, Center for Prairie Studies, Grinnell College

The Grinnell Area Local Food Alliance (GALFA) seeks to expand the local food system in and around Grinnell with a two-year initiative. A directory was published with information on Grinnell-area food producers who market locally. Due to a lapse in coordination services, the project timetable had to be altered. The Leopold Center is supporting the segment of GALFA's effort that deals with institutional buyers (hospitals, nursing homes, restaurants, grocery stores, and schools) that provide food to customers or clients.

Industrial co-location opportunities for meat processing, 1 year (ending 2003)

M. Holz-Clause and S. Johnson, ISU Extension Value-Added Program

This study analyzed the feasibility and desirability of co-locating ancillary industries next to multi-species meat packing plants. The potential for standard meat processing ancillary service businesses appears unlikely to locate near these kinds of plants. However, some niche areas with potential for entry by small businesses included organic pet food, organic bones, fertilizer, and edible offal (for use in some ethnic markets).

Investigating Iowa plants as natural dyes, 2 years

S. Kadolph, ISU apparel, educational studies, and hospitality management

Natural dyes are being investigated as renewable and sustainable agricultural products. Iowa plants (fruits, vegetables, flowers, trees, and vines) will be examined for their potential as natural dyestuffs. Researchers planned to focus on ten new plant possibilities and continue working with 14 other substances. Questions to be addressed include identification of plant components or residue to be collected, time in which the collection should occur, the color produced, the consistency of the color, and the color's ability to withstand light and washing.

Johnson County food education project, 1 year (ending 2003)

C. Hunt, Johnson County Soil and Water District

A barrier to greater production and consumption of locally grown food is a lack of consumer knowledge about the implications of personal food choices, and about how to actually purchase and use fresh/minimally-processed food. The Johnson County Food Education Program used a variety of tools to interest consumers in locally grown food: workshops, all-Iowa meals, recipes featuring Iowa products, local food cooking classes, information about eating locally in the off-season, and how to harvest and store vegetables.

Let the vineyards be fruitful: A study of the potential market for Iowa grape juice, 1 year (ending 2003)

C. Chase, ISU Extension

Buying clubs and churches were surveyed to assess the market potential for grape juice made from Iowa grapes. Buying club members valued freshness, taste, and other product characteristics related to nutrition and health. There was considerable interest in local organically grown grape juice and a sparkling grape juice product. Churches cited convenience of purchase, taste and price as important purchase factors. Potential demand for locally grown grape juice went up substantially as number of church members increased.

Life in Iowa Homecoming Institute, 3 years

N. Bevin, ISU Extension

"Life in Iowa" is an ISU Extension undergraduate credit program. The program places students in Iowa communities for ten weeks during the summer, and this year 33 Iowa counties found niches for these student workers. The program combines class work, paid internships, and service learning. The Leopold Center sponsored three interns in 2002 and five interns in 2003 to work with rural activities that focus on sustainable agriculture, food systems, and the environment.



THE LEOPOLD CENTER CONTINUES TO FUND A NUMBER OF RESEARCH EFFORTS THAT WERE IN THE MIDST OF THEIR INVESTIGATIONS AT THE TIME THAT THE BUDGET CUT OCCURRED. TWENTY-THREE PROJECTS WERE RENEWED FOR AN ADDITIONAL YEAR OF FUNDING. FIFTEEN PROJECTS (INDICATED HERE AS ENDING 2003) CLOSED JUNE 30, 2003, AND WERE TO PROVIDE THEIR FINAL REPORTS TO THE CENTER LATER IN THE YEAR.



AGRICULTURE AND COMMUNITY

Developing a local food system in association with business and industry, 3 years

**W. Johnson, Limestone Bluffs
RC&D, Maquoketa**

A group of agricultural producers, in conjunction with local businesses and a sheltered workshop, created a subscription sales demonstration project for local food. Market research was conducted to determine interest in a subscription sales program in larger population areas such as the Quad Cities since interest was modest in smaller towns.

An internship program to help institutional food buyers develop links to local farms in northeast Iowa, 3 years

**K. Enshayan, Center for Energy and
Environmental Education, University
of Northern Iowa**

This project seeks to facilitate a stable local food-buying process by placing trained interns in several hospitals and nursing homes, and with other large food buyers. Recent work included meetings with various restaurants, country clubs and other institutions to assess their needs and involve farmers who could meet those needs. The ordering system for institutions was refined to make it easier to operate.

Local food connections: from farms to restaurants, 2 years

**R. Karp, Practical Farmers
of Iowa (ending 2003)**

Drawing upon experience in their local food systems program, investigators organized two workshops and a resource

manual for producers who want to market their products to restaurants. Additional efforts were made to help start a brokering service to meet the increasing demand for local food in central Iowa that PFI has been experiencing.

Sustaining agricultural producers through direct marketing of processed foods, 3 years

**C. Chase, Black Hawk County
ISU Extension, Waterloo**

This project investigated potential returns for farmers making the transition to direct marketing of specialty crops. Important factors are the potential demand for these products and the likelihood of profitability (possibly frozen sweet corn and strawberries). ISU Extension vegetable budget programs are to be created.

CROP AND/OR FORAGE SYSTEMS

Black walnut cultivar performance, 3 years

**B. Hanson, Iowa Nut Growers
Association, Centerville
(ending 2003)**

Members have planted a number of black walnut cultivars at several sites throughout Iowa and are tracking costs and performance. Assessments are moving beyond the nut characteristics to evaluate all relevant qualities of a particular cultivar for use in Iowa commercial orchards.

Development of dormancy breaking mechanisms in eastern gamagrass, 3 years

L.R. Gibson and A.D. Knapp, ISU agronomy (ending 2003)

This research is targeted at developing preconditioning treatments for supplying high germinating, low dormancy seed to forage producers and conservationists who want to tap the potential of this warm-season grass. Two methods were tested – solid matrix priming with gibberellic acid and pre-chilling with gibberellic acid. Results suggested that solid matrix priming can be used to control seed hydration of eastern gamagrass. Addition of gibberellic acid to solid matrix priming was partially effective at breaking seed dormancy. Addition of gibberellic acid to pre-chilling resulted in more rapid dormancy loss and improved germination rate.

Development of switchgrass as a viable agricultural commodity for farmers in southern Iowa, 2 years

D. Guffey, Chariton Valley RC&D, Centerville (ending 2003)

This project funded information and educational materials for the multi-county, multi-agency Chariton Valley Biomass power project. Special efforts focused on disseminating the results of the 2002 Biomass Conference and research findings on biomass.

Evaluating the adaptability of forage species and varieties in northwest Iowa, 3 years
D. Haden, ISU Northwest Research and Demonstration Farm, Sutherland (ending 2003)

Stands of six legumes and grass species were evaluated at the Doon (northwest Iowa) research farm site and at the McNay Research Farm in southern Iowa to determine regional adaptation, longevity, and forage traits. Results were presented at field days at the farms.

Improving productivity of warm-season pastures by interseeding legumes, 3 years
K. Moore, ISU agronomy (ending 2003)

Growing legumes in mixtures with warm-season grasses could improve the quality of forage to grazing animals, and potentially reduce or eliminate nitrogen fertilizer requirements of a pasture. Forage quality of collected samples was evaluated for dry matter digestibility, total nitrogen concentration, and fiber composition. Additional research included spatial analysis of various pasture characteristics.

Incorporating grassland agriculture into row crop production systems, 3 years
M. Mensching, USDA-Natural Resources Conservation Service, Knoxville

The project goal is to increase farmer use of grass-based conservation alternatives in Madison, Warren, Marion, and Mahaska counties. A farm was selected in each county to serve as a demonstration site. The producers (who will receive incentive payments for participation) are providing economic and management

information for incorporating grasslands into crop production systems on marginal soils. Each farm offers a unique perspective and soil conservation and management challenge. Education activities planned included a field day in each county, several workshops on grass-based alternatives, a fact sheet and publicity.

Sustainable grape production for the reestablishment of Iowa's grape industry, 3 years
Gail Nonnecke, ISU horticulture

In response to increased interest in viticulture in Iowa, researchers are looking at whole-systems management practices related to culture and training,



pest management, and cultivars suitable for grape growing in Iowa. Researchers continued to test various whole-system treatments, best-management

practices, and organic-approved practices in vineyards at two ISU research stations in central and southwestern Iowa.

The value of CRP filter strips for grassland bird communities, 2 years
L. Best, ISU Natural Resource Ecology and Management (ending 2003)

The project evaluated bird use and productivity in 34 Conservation Reserve Program (CRP) filter strips. They determined that design and management of filter strips for conservation of grassland birds will need to consider the effects of strip width, presence of woody vegetation, and vegetation heterogeneity.



LIVESTOCK MANAGEMENT

Evaluating pork production systems for niche markets, 3 years

**D. Stender, Cherokee County
ISU Extension, Cherokee**

The investigator is working with several northwest Iowa producers to obtain on-farm data for comparing hoop and confinement operations. A database is being constructed to compile information on seasonal environment, nutrition, genetics, and operator management differences in sustainable systems.

NUTRIENT MANAGEMENT

Agronomic and environmental soil testing for phosphorus and threshold levels in soils, 3 years

**A. Mallarino, ISU agronomy
(ending 2003)**

The project seeks to provide practical information for improving agronomic and environmental aspects of phosphorus (P) management. Various types of field trials at research farms and in farmers' fields were completed, but data analysis for the last year continues. Early results showed (1) deep banding or injection of P had no effect on crop yield but reduced P accumulation near the soil surface, (2) variable-rate P application based on GPS and soil-test P reduced P application to high-testing areas within fields, (3) P loss with surface runoff is several times higher and more likely than to occur than with subsurface drainage, and increases markedly with increasing soil-test P. The study offers useful information to validate the Iowa P Index and improve P management.



Optimizing solid manure application by improving distribution, 3 years

M. Hanna, ISU agricultural and biosystems engineering (ending 2003)

Researchers evaluated the uniformity of existing spreaders, developed a model to describe how manure is thrown from the spreader, and applied manure at variable rates to measure crop response. Recommendations are forthcoming to promote more efficient spreader design.

PEST MANAGEMENT

Biotic interference of biological control of purple loosestrife, 3 years

**J. Obrycki, ISU entomology
(ending 2003)**

In an earlier grant, the Leopold Center and Iowa Department of Natural Resources funded a biological control program to develop a mass rearing and release program for *Galerucella* beetles to help control an invasive, exotic wetland plant (purple loosestrife). The biomass of loosestrife and other plant vegetation was assessed in wetlands where *Galerucella* have been released as well as wetlands where *Galerucella* have not been introduced. Data was collected on the effects of predators on the *Galerucella* released in loosestrife-infested wetlands.

The effects of thrips on strawberry production in Iowa, 2 years

**J. Obrycki, ISU entomology
(ending 2003)**

Beginning in 1994, strawberry growers adopted regular early-season insecticide applications to control thrips, minute insects whose feeding habits are suspected of being the agent behind bronzing damage. Ongoing research included weekly collection of data in three fields, analysis of data from greenhouse experiments, and soil sampling. Educational materials will be developed from the project results.

Evaluating sustainable, integrated management of muskmelon diseases, weeds, and insect pests in partnership with Iowa growers, 3 years

**M. Gleason, ISU plant pathology
(ending 2003)**

Investigators tested management techniques to reduce synthetic chemical use (up to 15 applications per season in some cases) on muskmelons without sacrificing crop quality and yield. The project tested several alternative techniques on ISU research farms at Gilbert, Muscatine, and Castana, as well as on the farms of commercial muskmelon growers.

Investigation of the influence of tillage for management of woolly cupgrass, 4 years

M. Owen, ISU agronomy

Woolly cupgrass continues to be a serious weed problem in corn and soybeans. This research examines the response of woolly cupgrass to specific crop management practices. To provide representative data, the tillage experiment was reseeded to woolly cupgrass in a new area during spring 2003 in order to replenish the seedbank. Baseline seed populations in the soil will be determined in fall 2003. Tillage will be repeated for the 2004 growing season to determine which tillage regime, under reduced inputs for weed management, has the most positive impacts corn yield.

WATER QUALITY

Economically sustainable riparian buffer to promote bank stability and reduce gully erosion and phosphorus runoff in the Loess Hills, 3 years

M. Kelly, ISU natural resource ecology and management

Investigators propose to evaluate the effectiveness of a tree-based riparian buffer in the Deep Loess Hills for suitability in managing landscape issues such as erosion and phosphorus movement. New yearly measurements are being incorporated into the project and data spanning two growing seasons has been released.

Evaluating the effectiveness of restored wetlands for reducing nutrient losses from agricultural watersheds, 3 years

A. Van der Valk, ISU botany (ending 2003)

This study examines at two levels — the sub-watershed and wetland — the effectiveness of wetland restorations for reducing nutrients in agricultural runoff in the Iowa Great Lakes watershed. Automatic water samplers were employed in the last year of the project. Data from these samplers allowed researchers to better estimate water and nutrient yield from a given watershed or wetland.

Impact of swine manure applications on phosphorus, NO₃-N and bacterial concentrations in surface runoff and subsurface drainage water, 3 years

R. Kanwar, ISU agricultural and biosystems engineering (ending 2003)

The goal of this research is to demonstrate the impact on surface and groundwater quality of liquid swine manure application when application is based on nitrogen (N) and phosphorus (P) needs of crops. Six different nutrient (N and P) management systems are being evaluated in this study to determine systems effects on surface and subsurface water quality. Some problems have arisen between the intended and actual nitrogen application rates from liquid swine manure due to variable characteristics in the manure supplied for the project.



Impacts of managed grazing on stream ecology and water quality, 3 years

J. Russell, ISU animal science

The project investigated the amounts of sediment and phosphorus in the runoff from pasturelands managed by different systems. The goals are to develop tools that would allow producers to monitor and control sediment and phosphorus loss from pastures and develop applicable best management practices. ISU researchers are working with the Iowa Cattleman's Association on this research.

Understanding the potential of phosphorus transport to water resources via leaching, 2 years

J. Baker, ISU agricultural and biosystems engineering (ending 2003)

Investigators in this project are providing information and understanding about the reduction in phosphorus (P) leaching losses with lateral water movement to tile drains through P-deficient subsoils, and are determining if such soils significantly lose their capacity to remove P over time. Information from the project is being used in three ISU classes and is contributing to the discussion on the validity of the P index recently developed for Iowa.

fy03 **JULY-JUNE** *Leopold Center for Sustainable Agriculture*

Operational Budget:

Salaries & Benefits	447,338.16
Info Systems	8,891.75
Office Equipment	22,054.01
Office Expenses	19,051.76
Printing	
Newsletter	11,815.98
Annual Report	6,914.00
Other	16,666.94
Postage	
Newsletter	4,670.47
Other	7,243.87
Services, Information & Communication	27,704.36
Travel	17,049.79
Meeting Expenses	5,412.72
Utilities/Maintance & Repair	1,489.23
Total Operational Expenditures	596,303.04

Research and Grants Budget:

Competitive Grants	791,152.06
PFI Partnership	50,000.00
LTAR Support	50,000.00
Wallace Chair Support	20,000.00
Assoc Director's Support	68,889.00
Administrative Support	10,808.00
Total Grants	990,849.06

Initiatives Budget:

Ecological Systems Research	100,000.00
Marketing & Food Systems Research	100,000.00
Policy Research	100,000.00
Total Initiatives	300,000.00

Total Budget: **1,887,152.10**





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